CHAPTER 4
STATE-LEVEL ANALYSIS OF PRE-REFORM ADULT SSI APPLICATION TRENDS

I. INTRODUCTION

A. Purpose

In this chapter we analyze state-level adult SSI disability application trends from 1988 to 1997. We focus on state-level trends and variation across states, because TANF reforms are state-level reforms and will likely have different effects on SSI by state.

The analysis serves five general purposes:

- To provide information on what state-level trends in applications were in the years prior to the reforms of interest;
- To assess whether, and how best to implement a pooled time-series approach to the evaluation of the impacts of reforms on SSA programs;
- To provide information that is useful in assessing the impacts of early AFDC reforms on SSI applications;
- To provide information about the impacts of other factors that may be confounded with the impacts of AFDC/TANF reforms, such as the economy and cuts in general assistance programs; and[37]
- To provide contextual information that is helpful in interpreting the analysis of matched SIPP/SSA data that is presented in the next two chapters.

We pay considerable attention to the effects of state general assistance (GA) program reductions during the period because the challenge of evaluating the effects of cuts in these programs is analogous to the challenge of evaluating TANF welfare reforms. GA programs are state-specific, they vary considerably in their nature. The nature of the reforms also varies considerably, as do the timing of the reforms. Reforms in some states are so extreme that it is relatively easy to see an effect on SSI applications, and reforms in other states are so modest that the impact on SSI applications, if any, is not obvious. The analysis of the GA reforms provides important lessons for the future evaluation of TANF reforms.

[37] We could have pursued a parallel analysis of allowances, but elected not to do so. Our earlier experience suggested that analysis of allowances using pooled time-series methods was more problematic than analysis of applications, and we also expected that if any effects of early reforms could be detected, effects on applications would be more evident than effects on allowances.

B. Application Data

We examine annual state application data from 1988 to 1997, by sex or by age (ages 18–29, 30–39, and 40–64). Ideally, we would examine data that are cross-classified by sex and age, because the applicant group most likely to be affected by the non-SSA reforms is young women, but such data are not readily available.

The data were obtained from two sources. For the period from 1991 through 1997, SSA staff prepared special state-level tabulations from a 10% sample of the Supplemental Security Record (10% SSR).[38] The data for 1988 through 1990 come from a public use file that The Lewin Group prepared under an earlier project (Lewin, 1995b). These were initially prepared by staff at the Office of Disability from a research file that contained information on 100 percent of applications over the period from 1988 to 1992. Comparison of the latter tabulations to the 10% SSR data in the two years, for which we have both series, 1991 and 1992, showed that discrepancies were small.[39] The trend graphs in this chapter all show a vertical line between 1990 and 1991 to indicate the break in the source for the series. "Application rates" are defined as applications per 10,000 population in the relevant category. We used Bureau of the Census national and state population estimates to construct these rates.[40]

C. Overview

We begin with a simple review of national application trends by sex and age from 1988 through 1997 (***Section II***), based on the annual data. The period through 1996 can be viewed as the pre-reform "baseline" period. The section includes: a first-cut assessment of the effects of the aging of the baby boom generation on applications, by sex; a comparison of application rate trends, by sex and age, to trends in the unemployment rate and the AFDC/TANF caseload; and a review of plausible explanations of these trends. We then examine trends in selected states (***Section III***). We focus on states with noteworthy early reforms, and compare their trends to national trends and to trends in states in the same region. Next we present estimates from pooled time-series analysis of the state trends over this period (***Section IV***). We conclude with a summary of the main findings and a discussion of implications for the future evaluation of the impact of welfare reforms (***Section V***).

II. NATIONAL SSI APPLICATION TRENDS

The period from 1988 through 1996 can be viewed as a baseline period for all of the welfare reforms that were implemented as a result of the passage of the Personal Responsibility Work Opportunities and Reconciliation Act (PRWORA) in August 1996, and other welfare reform legislation that passed in 1996 and 1997 (see Lewin, 1998a**)**. Evaluators of the impacts of welfare reforms are likely to compare post-1996 application experience with baseline experience as a crude assessment of the impact of welfare reform. More sophisticated efforts may use

[38] These tabulations match regional tabulations that appear in the SSI Annual Statistical Report for 1997, available on SSA's website. We thank Charles Scott and Clark Pickett for preparing these data.

[39] See ***Appendix Exhibit D.18.***

[40] These are available from the Bureau of the Census website in State Population Estimates.

analyses of the experience in this period to model counterfactual applications in the post-reform period – what applications would have been in the absence of the reforms.

The usefulness and validity of using this period in the manner described depends very much on what happened during this period. Is it reasonable to believe that the application experience in this period would have been replicated after 1996 in the absence of the reforms? If not, can we use the information from the 1988-1997 period to predict what that experience would have been, with a reasonable degree of confidence? Experience in this period may also be used to assess whether early (pre-PRWORA) welfare reforms already have had impacts on SSI applications.

In this section, we present our current understanding of the major features and causes of SSI application growth during the 1988-1997 period. This understanding is in part based on analyses of the period before 1993 that we have performed previously (Lewin, 1995a and 1995b).

In 1988, 59 adult SSI disability applications were filed for every 10,000 "working-age" adults – those between the ages of 18 and 64 (***Exhibit 4.1***). The application rate grew rapidly in the next five years, peaking at 99 per 10,000 in 1993, a 68 percent increase from 1988. It dropped almost as rapidly in the next four years. By 1997, the application rate had declined to 69 per 10,000, and showed no signs of leveling off.

Exhibit 4.1
Estimated Adult SSI Disability Applications per 10,000 Population and Age-Adjusted Applications per 10,000 Population, 1988 – 1997

Source: SSI applications were tabulated by SSA staff, and population data are from the Bureau of the Census. The vertical line between 1990 and 1991 represents a break in the source of the application tabulations. See the text for further details. Data are in ***Appendix Exhibit D.17***.

One force behind growth in the application rate was a gradual upward shift in the age distribution of working-age adults, as the baby boom aged. Those in the largest baby boom cohort were approximately 30 years old at the beginning of this period and almost 40 at the end. The effect of this factor on growth during this period was not very large, and clearly was not the cause of the rapid growth in the early part of this period. This can be seen by comparing the actual application rate series to a series that has been adjusted for changes in the age distribution of the population (***Exhibit 4.1***). The latter is a weighted average of age-specific application rates, with weights equal to the share of the working-age population in the age group in 1990.[41] Comparing the growth in the two series indicates that the contribution of this factor to growth from 1988 to 1997 was just under two applications per 10,000 population. The effect may be somewhat larger than that because the age categories used to construct the age-adjusted series were very broad, and the adjusted series do not control for the effects of changes in the within-category age distributions.

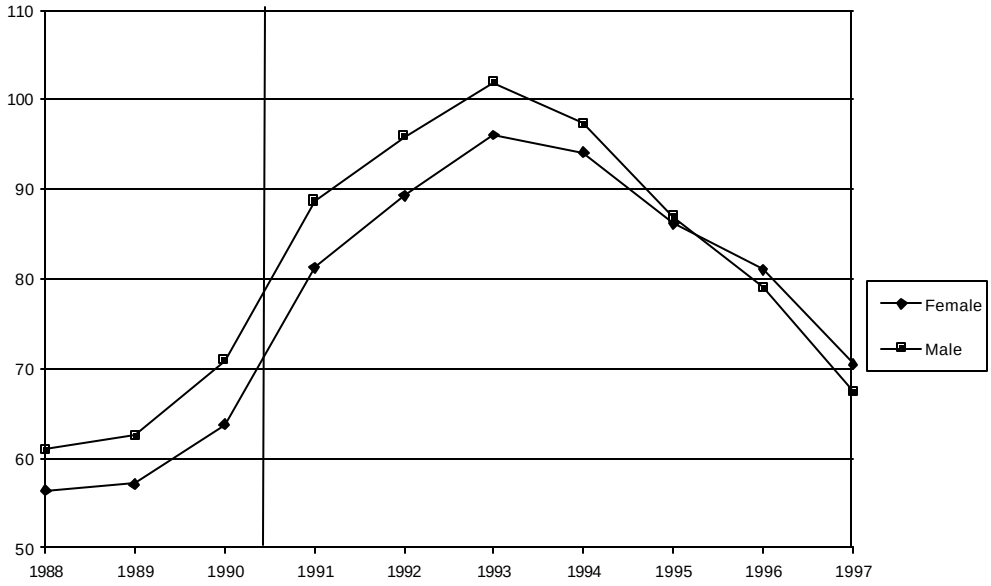
At the beginning of the period, the application rate for women was somewhat below that for men (56.4 vs. 61.0), but by the end of the period the female rate was higher (70.5 vs. 67.5) (***Exhibit 4.2***). One interesting question is whether this shift is due, in part, to non-SSA welfare reforms that occurred during this period, at least in some states. It might also reflect a "shift" of women from AFDC to SSI that is caused by factors other than the non-SSA welfare reforms. There are several other possibilities, including:

- aging of the baby boom generation and historically steeper age-application profiles for women than men;
- economic recovery; and
- a decline in the influence of general assistance reforms, which affected male applications more than female applications.

We consider the first of these below, and return to the others later in this section.

[41] Data for three age groups were used to construct this series: 18-29, 30–39, and 40–64. SSI applications were tabulated by SSA staff, and population data are from the Bureau of the Census.

Exhibit 4.2
Estimated Adult SSI Disability Applications per 10,000 Population by Sex, 1988 – 1997



Source: SSI applications were tabulated by SSA staff, and population data are from the Bureau of the Census. The vertical line between 1990 and 1991 represents a break in the source of the application tabulations. See the text for further details. The data appear in ***Appendix Exhibit D.16***.

The aging of the baby boom cohort provides a partial explanation of the growth in applications from women relative to those from men. Data from 1998 show that young men had higher application rates than young women, but older men had lower application rates than older women. If these age-sex specific rates were constant over time, the overall rate for women would rise relative to that for men as the at-risk population ages, just as we observe.

While we have not examined earlier periods, we conjecture that application rates for women have always increased with age relative to those for men. This would be consistent with historical sex role differences in society at large, the prevalence of female-headed households with children in the low-income population, and a welfare system that provides support for those households. Men are more likely than women to work when they are young and are therefore more likely to be eligible for DI benefits, and not SSI, after later onset of disability. Also, as Daly (1998) has shown, and the analysis in the next chapter demonstrates further, many adult AFDC women do transition into SSI. This may be partly because their children are aging out of AFDC. Hence, we would expect the aging of the baby boom cohort to not only contribute to the relative growth in applications from women, but to also result in some shifting of the adult welfare population from AFDC to SSI.

To assess the extent to which the aging of the baby boom alone contributes to the relative growth in applications from women, we have constructed application rates for men and women that have been adjusted for age. This controls for the effect of the aging of the baby boom, making it easier to assess the effects of other factors. The series we will examine have also been normalized, by sex, to a value of 1.0 per 10,000 in 1988; i.e., we have divided each year's application rate in a series by the 1988 value for the series to obtain the age-adjusted application rate in the year relative to the 1988 figure. Thus, for instance, a value of 1.35 in 1992 indicates

that the estimated application rate for the relevant sex group was 35 percent higher in 1992 than in 1988 after adjusting for change in the age distribution for the group.[42] Normalization of the series facilitates comparisons of changes across the two sex groups. We also present indices for application rates by age. These are simply age-specific application rates that have been normalized to be 1.0 in 1988.

All five of the indices (age-adjusted series for men and women and three age-specific series) are presented along with two other normalized series in ***Exhibit 4.3***. The first of these is the national unemployment rate divided by the 1988 value, and the second is for the AFDC/TANF caseload (i.e., number of families) per working-age adult. Like the application series, the latter series has been adjusted for the aging of the baby boom, and normalized to be 1.0 in 1988.[43]

The national age-adjusted application indices for men and women grew at essentially the same rate from 1988 through 1992 (top figure in ***Exhibit 4.3***), so in at least a proximate sense, the aging of the baby boom explains the relative growth of the female application rate during that period. From 1993 on, however, there is a clear divergence, with the female index first increasing more rapidly than the male rate, then declining more slowly. By 1997, the male index had declined to 1.08 (i.e., just eight percent above the 1988 value), while the female index had only declined to 1.19. While some of the divergence in the indices after 1992 might disappear were we able to use more narrowly defined age groups in making the age adjustments, it seems likely that this divergence reflects the effects of other factors, possibly including AFDC/TANF reforms or factors that may have shifted adult AFDC/TANF recipients to SSI.

A second important feature of application rate trends in this period is that rates for younger age groups increased substantially relative to those for older age groups, especially after 1991 (bottom figure in ***Exhibit 4.3***). Although application rates increase with age throughout the period,[44] the application rate for the middle age group (30–39) rose most rapidly, with its index reaching 2.09 in 1993. By comparison, the index value for the youngest age group (18–29) was 1.65 in 1993, and the index value for the oldest age group (40–64) was 1.68. The age-specific rates converged somewhat as they declined. In 1997, however, the rates for the two younger age groups were still much higher than their 1988 values (1.41 for the middle group and 1.30 for the youngest group), while the rate for the oldest age group was not (1.11). As with the relative changes in application rates for men and women, these changes might reflect AFDC/TANF reforms, or might be due to other factors that would shift adult AFDC/TANF recipients onto SSI.

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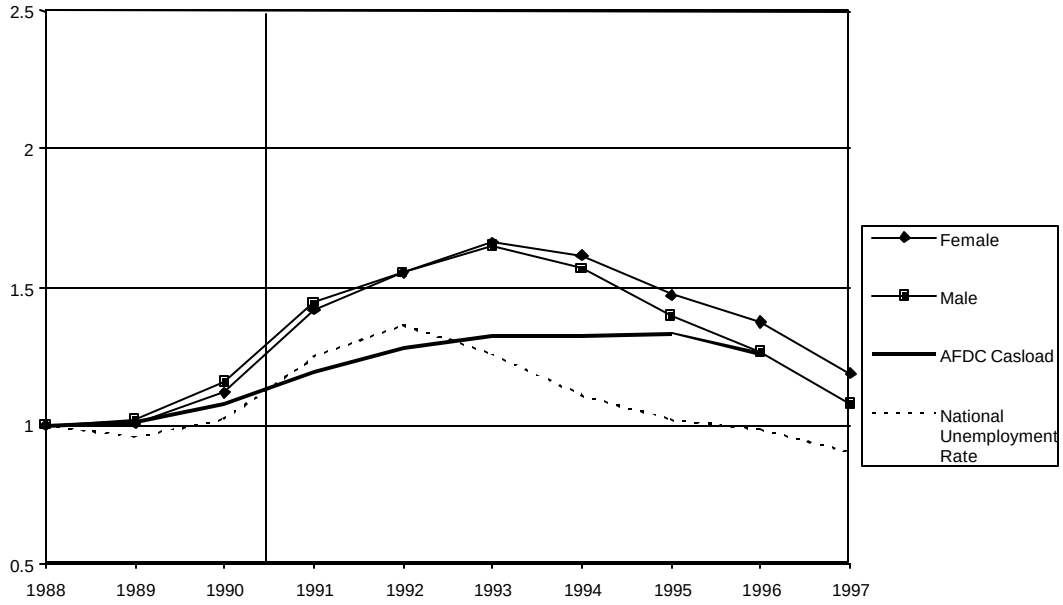
[42] The age-adjustment process used for later series is somewhat different than that used for the national series presented above. For each group (e.g., women in Delaware) we first computed "expected" applications in each year after 1988 based on national 1988 age specific application rates, by sex, weighted by the current year age distribution of the group in the relevant geographic area. Actual applications were then divided by expected applications and the result was divided by the corresponding value for 1988 to obtain the index value. This process implicitly uses current year population age distributions to weight age group specific application growth, rather than weights based on the 1990 population.

[43] The age adjustment method used for the AFDC caseload series is analogous to the method used for the SSI application series. Details may be found in Lewin (1997a). The caseload data were obtained from the Administration of Children and Families.

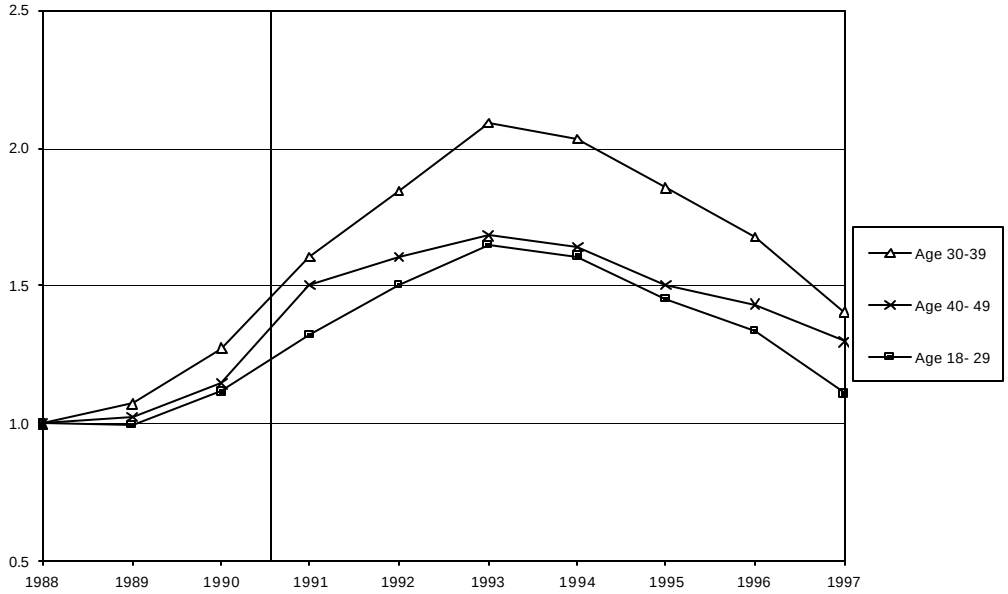
[44] In 1988 the application rates for the young, middle, and old age groups were 40, 49 and 80, respectively. They rose to peaks of 71, 94 and 120, respectively, in 1993, and then declined to 49, 64 and 83, respectively, in 1997.

Exhibit 4.3
Adult SSI Disability Application Indices, 1988 – 1997

A. By Sex (age adjusted)



B. By Age



Source: The indices are calculated from SSA application data and population data from the Bureau of the Census. The vertical line between 1990 and 1991 represents a break in the source of the application tabulations. The unemployment index is calculated from Bureau of Labor Statistics data, and the AFDC caseload index is calculated from data provided by the Administration for Children and Families and population data. See the text for further details. The data appear in ***Appendix Exhibit D.17***.

In previous work we have examined causes of SSI application growth from 1988 through 1992, and concluded that there were three major explanations in addition to the aging of the baby boom, (Lewin, 1995a, 1995c). The first of these was the 1991 recession. As is evident from a comparison of the national unemployment rate to the application indices over this period (***Exhibit 4.3***), the business cycle offers a plausible explanation of growth and then decline. In our earlier work, we showed that male applications were more sensitive to the business cycle than female applications, which implies that, other things equal, the male rate will rise relative to the female rate during a recession and fall during a recovery. This would imply an increase in the male application rate relative to the female application rate in the earlier part of the period, and a decline later on. If correct, then the synchronous growth of the male and female indices at the beginning of the series masks the effect of some factor that is offsetting the impact of the recession on relative growth rates.

A second major cause of application growth, cuts in GA programs, also implies more rapid growth for males than females in the first half of the period and a more rapid decline in the second, other things constant. Three large states, and several smaller ones, substantially reduced their GA programs in 1991 and 1992. Michigan essentially eliminated its program, and both Ohio and Illinois reduced their GA caseloads by about half. Our earlier work showed that the impact of these changes was somewhat larger for men than for women.[45] This adds to the difficulty of explaining why the male and female indices grew at the same rate in the first half of the period. Other state policy changes – especially outreach to potential SSI recipients, and Medicaid reforms -- were identified as possible contributors to application growth during this period, too, but it was not feasible to demonstrate this empirically. We do not know enough about such changes to assess whether they would have relatively larger impacts on applications from women. Such activities might have shifted some adult AFDC recipients into SSI.

The third major cause of application growth in the first half of the 1988-1997 period is changes in SSI itself. Changes in rules regarding the treatment of evidence from the applicant's physician ("source evidence") and regarding the assessment of pain and other symptoms clearly made it easier to obtain benefits on the basis of psychiatric and musculoskeletal disorders. Several court decisions made it easier to obtain benefits because of severe substance abuse disorders (see Lewin, 1997b). SSA's own outreach efforts also may have made a substantial contribution to application growth (GAO, 1994). Finally, the 1990 Supreme Court decision in the case of *Zebley vs. Sullivan*, along with subsequent change in the regulations concerning mental disorders for children, substantially expanded eligibility for children and may have had a spillover effect on adult applications. Outreach and advocacy efforts that aimed to help potentially eligible children apply may also have helped some of their parents, as well as other adults, become aware of their possible eligibility and apply. Collectively, all of these changes are sometimes alleged to reflect, or perhaps contribute to, a change in the "adjudicative climate" that encourages applications by favoring allowances in marginal cases.

Our earlier research indicated that these program changes contributed to an increase in applications from women relative to applications from men, and to an increase in applications from younger age groups relative to older ones (Lewin, 1995a). It also seems likely that any

[45] See Lewin (1995a).

spillover effect of eligibility expansions for children would be greater for women and young adults than for men and older adults. Thus, these changes may explain why the age-adjusted application rate for women kept pace with that for men in the first part of the period, despite the fact that the recession and GA cuts apparently had larger impacts on men. The evidence we examined also made it clear that the effects of these changes were greatest for the younger age groups. It seems very likely that a considerable number of those induced to apply by these changes were AFDC recipients, especially among women in the two younger age groups, and that this resulted in a shift in participation from AFDC to SSI.

The most significant changes to SSI in the latter part of the period were the ending of eligibility for those whose drug abuse or alcoholism (DA&A) is material to their disability, and tightening of eligibility for children.[46] Eligibility for DA&A cases was first tightened in 1994, and eliminated entirely on January 1, 1997. About 72 percent of the beneficiaries who were targeted by the DA&A reforms were male, and the share of targeted male beneficiaries who retained eligibility as of December 1997 was lower than for women (33 percent vs. 37 percent).[47] These reforms likely discouraged potential applicants, and the above statistics suggest that this would reduce applications from men relative to those from women. The new SSI child reforms would also reduce applications from women relative to those from men.

Two other findings from our earlier work are of less importance for overall trends, but are relevant to variation in trends across sex and age groups. The first is that the HIV/AIDS epidemic had a positive effect on applications, especially from men and especially in the middle age group (Lewin, 1995a). It may be that the size of this effect has abated since 1992, contributing to a relative decline in the number of male applicants. Second, holding other things constant, we found a positive association between growth in the share of children living in one-parent households -- a crude proxy for changes in the share of two-parent families -- and applicants in the younger age groups, especially among women (Lewin, 1995a).

Another finding from our earlier work deserves mention. SSI applications from non-citizens grew much more rapidly than those from citizens during the 1988-1992 period. There were two competing explanations of the cause: legalizations under the Immigration Reform and Control Act of 1986 (IRCA), and larger impacts of the recession on immigrant employment. We were not able to distinguish between these causes. Growth of applications from non-citizens is clearly a proximate cause of the very high application growth rates in California and Florida, and may have contributed significantly to growth in some other states, but it may simply reflect greater impacts of other factors on applications from these groups.

Both DeLiere (1997) and Acemoglu and Angrist (1998) suggest that the 1990 Americans with Disabilities Act (ADA) contributed to growth in SSI (and DI) caseloads in the years following its passage. The evidence they present appears to support the theory that the ADA has created a deterrent to hiring people with disabilities, because of concerns about high potential accommodation or litigation costs. Induced declines in job opportunities for people with disabilities would presumably increase the attractiveness of participating in SSI or DI relative to

[46] See Lewin (1997), for more details on these reforms.
[47] See Lewin (1998b).

work. If the ADA contributed positively to SSI application growth over this period, we would expect the contribution to be greater for men than for women, because the research on this issue to date has found larger employment effects for men. This would make it more difficult to explain the relative growth in the application indices for women. Burkhauser and Bound (forthcoming) are skeptical about the findings of this research because it does not adequately account for the differential impact of the recession on employment of people with and without disabilities.

It is interesting to compare the trends in the SSI application indices to the trend in the AFDC/TANF caseload index. In comparing these series, it is important to keep in mind that the former series are indices of the flow of applicants to SSI while the latter is an index of the stock of AFDC/TANF cases. Ideally, we would compare the application indices to an index for entry into AFDC/TANF, which would show larger growth than the caseload series in the earlier part of the period and a larger decline in the latter part.[48] Unfortunately, flow data for AFDC/TANF are not available at the national level.

The comparison of the indices strongly suggests that some of the forces behind SSI application trends during this period had similar impacts on AFDC/TANF caseloads. The two most obvious, common forces are the business cycle and growth in the number of single-parent families. The national data neither confirm nor refute the hypothesis that declines in AFDC/TANF caseloads in the last few years have been partially achieved through shifts of adult AFDC/TANF recipients into SSI.

To summarize, the period under examination is characterized by first rapid growth in application rates, and then rapid decline. Application rates grew faster for women than for men. This is partly explained by the aging of the baby boom and sex differences in application rates by age, but not entirely. Application rates also grew faster for the middle age group than for both the young and, especially, the old age group. While these patterns are consistent with the hypothesis that early AFDC/TANF reforms "pushed" some adults to apply for SSI, there are other possible explanations of the variation in trends by sex and age. It may be that there was a substantial shift in program participation of women from AFDC to SSI due to factors other than AFDC/TANF reforms, including significant SSI program changes.

The national indices alone tell us very little about the relative importance of the many factors behind application trends during this period. Analysis of trends in individual states may be more informative, because of variation across states in the factors themselves. We turn to this in the next section.

[48] It would also be preferable to have an index of adult AFDC/TANF recipients, rather than caseloads (i.e., families), because in recent years there has been an increase in "child-only" AFDC/TANF families, and this may be partly related to movement of their parents from AFDC/TANF to SSI.

III. SSI APPLICATION TRENDS IN SELECTED STATES

A. Overview

In this section we examine trends in adult SSI disability application indices in 15 selected states, by sex and by age. The main purpose of this examination is to assess whether the trends observed at the national level – growth for women relative to men and growth for younger adults relative to older adults – are related to significant state-level AFDC and GA reforms during the pre-TANF period. If the very significant variation in national trends by age and sex is due, in part, to AFDC and/or GA reforms, we would expect to see evidence of this from comparison of trends in states with relatively significant reforms to those for states without reforms that are otherwise similar. The analysis of the GA reforms also illustrates the strengths and weaknesses of this type of analysis. A secondary purpose of this examination is further assessment of the effect of the business cycle on applications.

We selected seven states that had AFDC reforms prior to PRWORA that included significant TANF-like features: California, Connecticut, Florida, Georgia, Massachusetts, Michigan, and Wisconsin.[49] We also selected comparison states within the same region. Most of these states had no statewide AFDC reforms that would likely push adult recipients into SSI, but most also had demonstration reforms in some counties, and/or statewide AFDC reforms that would not likely affect SSI applications. It is very difficult to assess the possible impacts of reforms implemented in any given state during this period because it is difficult to determine the extent to which each of the many approved reforms were actually implemented. One aspect of this is that most reforms provided exemptions of some sort for people with disabilities. Information on details of the exemptions and, especially, how they were implemented is difficult to obtain.

The 15 states selected include nine of the ten largest states in terms of SSI applications (all but Louisiana). We list the pre-1997 reforms we have identified in these states below (***Exhibit 4.4***), and have placed an asterisk (*) next to those which, in our judgment, seem most likely to have had an impact on SSI applications before 1997. This judgment is based on more specific information about the reforms listed, as described in ***Appendix D***. Several of the reforms that were approved late in the period may have an impact on SSI applications in 1997 or later.

We are also interested in GA program changes. An important reason for including Illinois and Ohio among the selected states is to assess whether findings concerning termination of Michigan's GA program are replicated, at least qualitatively, in these states. Two of the states included because of our interest in their AFDC reforms also implemented GA cuts during the period, Massachusetts and Wisconsin.

We present two graphs for each of these states in ***Appendix D***. Each pair is analogous to the two national graphs presented previously in ***Exhibit 4.3***, including age-adjusted application indices for each sex, three age group application indices, an unemployment rate index, and an AFDC caseload index. These are constructed in the same manner as the national indices, using state

[49] We visited five of these seven states (all but Georgia and Massachusetts) for this project, and their reforms are detailed in our site visit report.

data, and control to a substantial extent for the effects of the aging of the baby boom cohort. We also show when the major reforms cited in ***Exhibit 4.4***, if any, were implemented. Some of the graphs appear later in this chapter, miniaturized to allow graphs from two or more states on a single page for comparison purposes.

A quick scan of the exhibits for all 15 states shows the following (***Appendix Exhibits D.1*** through ***D.15***):

- In all states, application indices increased substantially in the first part of the 1988-1997 period, and declined in the later years, but the magnitudes of growth and decline vary considerably.

- In all states, the application indices for women increase relative to those for men.

- In all states, application indices for the two younger age groups increase relative to those for the oldest age group. In most states, the rate for the middle age group grows faster than the rate for the youngest age group, but this is not uniform.

Exhibit 4.4
Summary of AFDC and GA Reforms before 1997 in Selected States

MIDWESTERN STATES
Illinois
• Work Pays Project approved in November 1993 • Work and Responsibility program approved in October 1995; new provisions approved in August 1996 • GA program cut significantly in 2nd Quarter of 1992*
Iowa
• Family Investment Plan (FIP) implemented in four counties in 1993 and approved for statewide in April 1996.
Michigan
• To Strengthen Michigan Families began in October 1992 • Sanction plan approved in April 1995* • Family Independence Program implemented in October 1996 • GA program essentially eliminated in 4th Quarter of 1991*
Ohio
• Ohio First implemented in July 1996 • GA program cut significantly in 2nd Quarter of 1992*
Wisconsin
• Gradual benefit cuts, beginning in 1986 and continuing throughout the pre-PRWORA period* • Parental and Family Responsibility Demonstration implemented in July 1994 • AFDC Benefit Cap (ABC) program implemented statewide in January 1995 • Work Not Welfare Program implemented in Fond du Lac and Pierce counties in January 1995 • Self Sufficiency First implemented statewide in March 1996* • Child Support Waiver demonstration project implemented in August 1996 • GA program cut significantly in 4th Quarter of 1995*

*Indicates reforms most likely to have an impact on adult SSI disability applications before 1997.

Exhibit 4.4 (continued)
Summary of AFDC and GA Reforms before 1997 in Selected States

NORTHEASTERN STATES
Connecticut
• A Fair Chance implemented statewide in November 1994*
• Reach for Jobs First implemented in January 1996
Massachusetts
• Transitional Aid to Families with Dependent Children implemented in October 1995*
• TANF Program implemented in September 1996
• GA program cut significantly in 2nd Quarter of 1992*
New York
• Child Assistance Program introduced in 1988 and gradually adopted in many counties over the period.
• Jobs First Demonstration approved for six counties in October 1994, but implementation was very slow
Pennsylvania
• Pathways to Independence Program approved for Lancaster County November 1994, but implementation was very slow
PACIFIC STATES
California
• Early provisions of the Work Pays Demonstration Project approved in March 1994*
• Work First model mandated for all county GAIN (JOBS) programs in 1995*
Oregon
• Oregon Option implemented statewide in April 1996
Washington
• Success through Employment Program (STEP) implemented in October 1995
SOUTHERN STATES
Florida
• Family Transition Program (FTP) implemented in two counties May 1994, expanded to eight counties in October 1995*
• Work and Gain Economic Self-Sufficiency (WAGES) implemented in October 1996
Georgia
• Personal Accountability and Responsibility program began January 1994*
• Work for Welfare Project implemented in 10 counties in November 1995*
Texas
• Achieving Change for Texans approved in March 1996, but implementation has been slow

*Indicates reforms most likely to have an impact on adult SSI disability applications before 1997.
Source: See ***Appendix D***.

- Comparisons of application indices to unemployment indices make it clear that the business cycle is not the only explanation of growth. Two of the northeastern states, Connecticut and Massachusetts, experienced the most severe recessions and had the weakest recoveries during this period (***Exhibit 4.5***). Their application indices were among those with the greatest increases and among those with the smallest declines in the last few years. At the same time, however, some Midwestern states that experienced relatively mild recessions (e.g., Michigan) had increases in application indices that were of the same magnitude as those in Massachusetts and Connecticut. Further, the dynamics of the relationship between the unemployment rate and the application indices appears to vary across states; unemployment rate changes lead changes in the indices in most states (e.g., Connecticut), but lag them in others (e.g., California).

- States with relatively mild recessions and no reforms likely to impact SSI applications in the early part of the 1988-1997 period nonetheless experienced substantial increases in their application indices in the middle of the period. This is most evident in Iowa. In 1992, 1993 and 1994, age-adjusted application rates for both men and women in Iowa were about 50 percent above their 1988 values – almost as high as the corresponding national values -- even

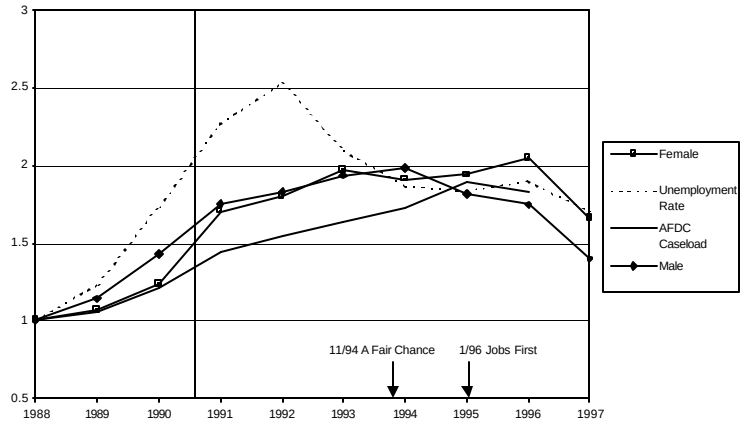
though the unemployment rate was essentially unchanged from 1988.[50] The absence of a substantial recession or significant reforms in Iowa suggests that SSI program changes account for this growth. Although growth is greatest for the middle age group, as in other states, there is also substantial growth for the oldest age group, suggesting that program changes had a substantial effect on growth for all age groups.

- In general, states with relatively high SSI application growth also had relatively high AFDC caseload growth (e.g., Connecticut, Massachusetts, and Michigan), and vice versa (e.g., Iowa and Wisconsin). This is consistent with our previous observation that significant common factors appear to be driving participation in both programs, such as the economy and growth in the number of female-headed households. Michigan is an exception, having had very high SSI application growth and relatively modest AFDC caseload growth.

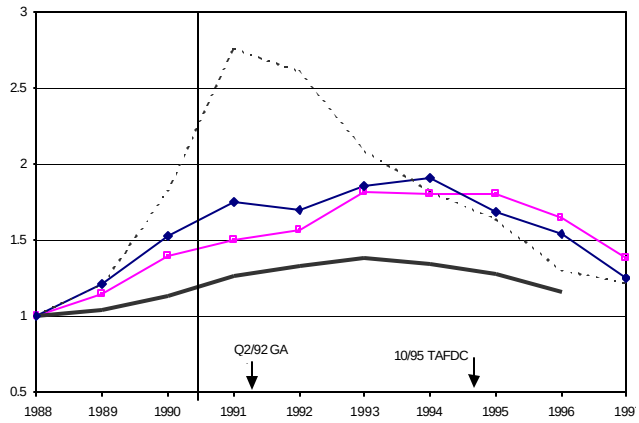
In the remainder of this section, we consider the trends in the selected states in more detail (region-by-region), focusing on what can be learned about the effects of the pre-1997 GA and AFDC reforms. One theme that emerges is that it is extremely difficult to see the impacts of any but the most extreme reforms through such an examination, and even in such cases it is very problematic to accurately measure the impacts of the reforms by making comparisons across states. This is both because strong comparison states are hard to find for each reform state, and because comparison states that appear equally well matched to a reform state can experience very different trends in their application indices -- differences that are presumably explained by other factors.

[50] While welfare reform in four counties might have contributed to growth in the Iowa indices after August 1983, the almost all of the growth in the indices was before that period.

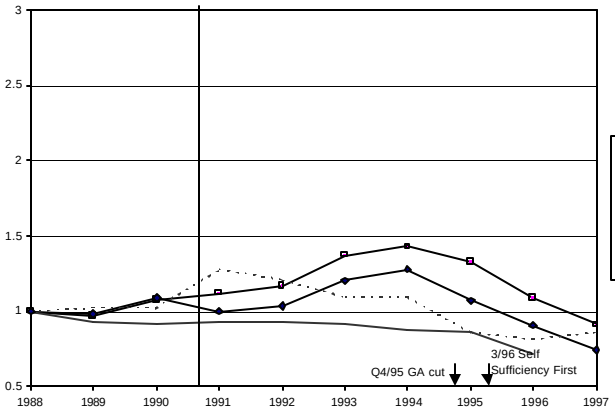
Exhibit 4.5
Comparison of Unemployment SSI Application, AFDC Caseload, and Indices, by Sex, for Selected States



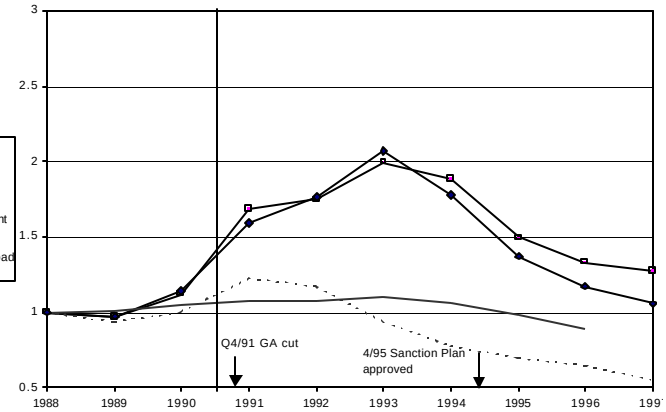
Connecticut



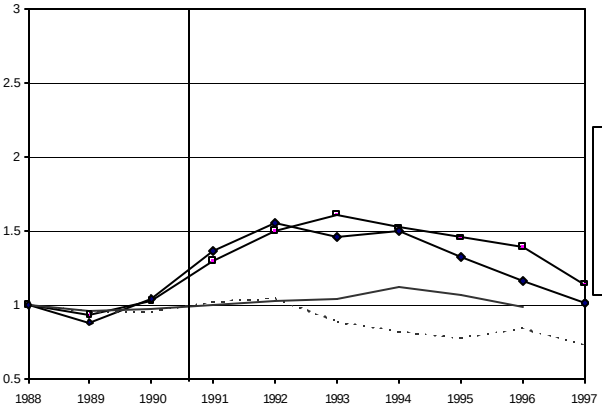
Massachusetts



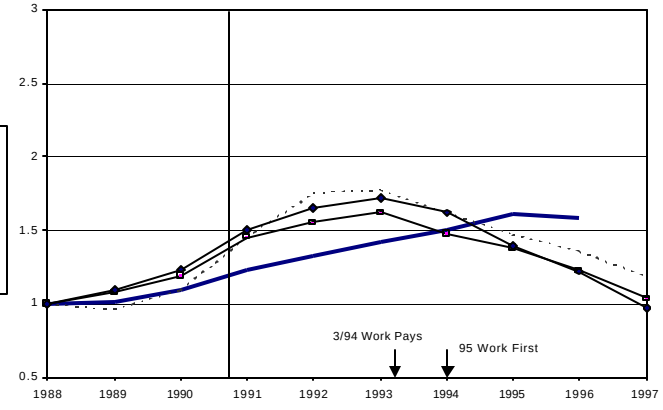
Wisconsin



Michigan



Iowa



California

See ***Appendix D*** for full-size graphs and application indices for each age group.

B. Midwestern States

The Midwestern states selected are of greatest interest to the analysis because two of them, Michigan and Wisconsin were considered to be at the forefront of AFDC reforms. Some would argue that the relatively large declines in AFDC/TANF caseloads in these states are as much due to their improving economies as to the state reforms. Whatever the cause, the early and substantial declines in their AFDC caseload indices, especially for Wisconsin, are remarkable when compared to experiences in other states. AFDC changes in Michigan are confounded by the fact that the State essentially eliminated its GA program in 1991. GA was cut somewhat in Wisconsin, but not until the last quarter of 1995.

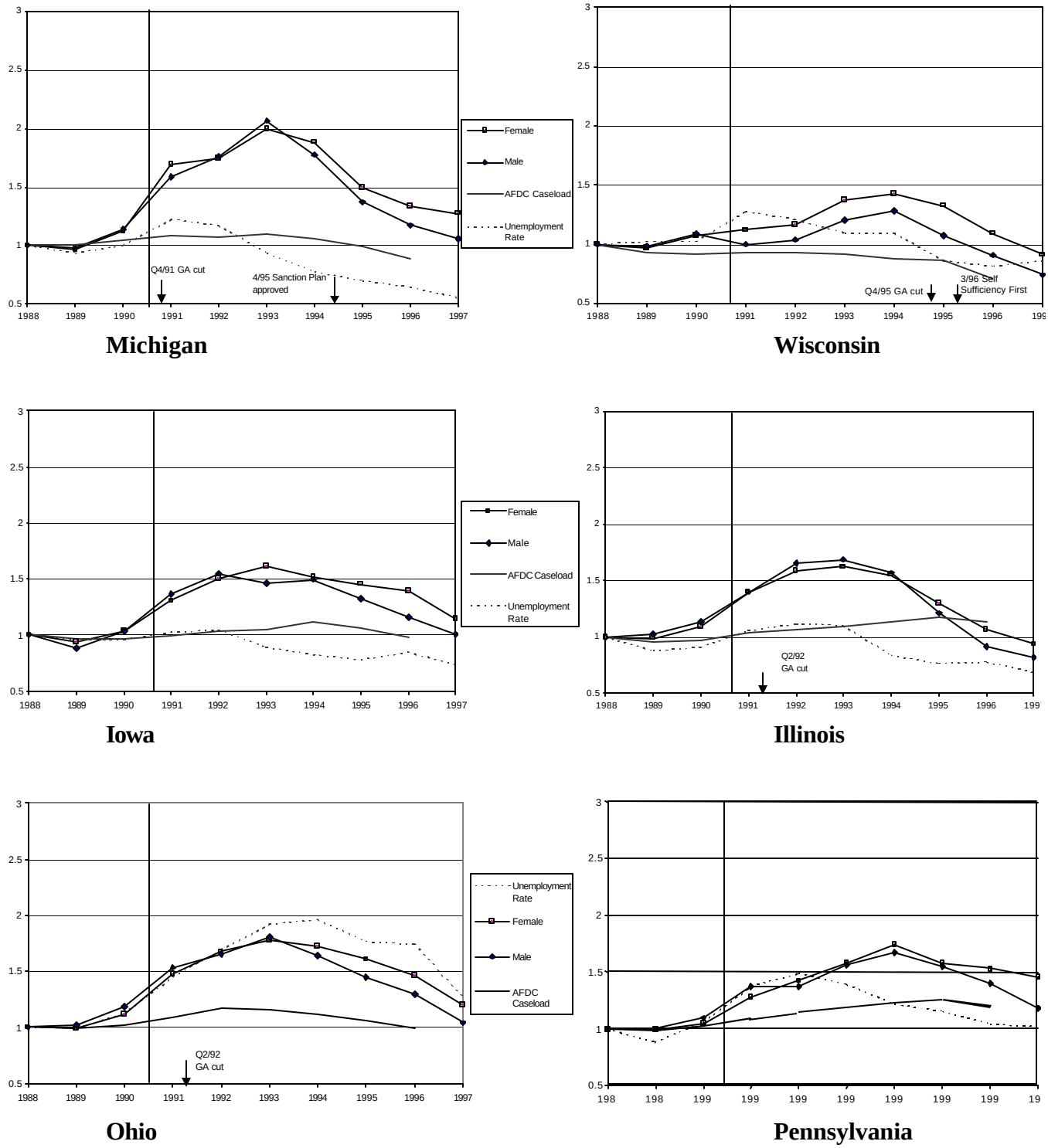
We compare these states to three Midwestern states (Iowa, Illinois, Ohio) and Pennsylvania. Iowa did test a significant reform in some counties, starting in 1993 (***Exhibit 4.6***), and it is possible that reforms implemented in Illinois late in 1995 would have had an impact after that date. Illinois and Ohio both cut their GA programs very significantly in 1992. Pennsylvania is also a reasonable comparison state for this group, and implemented no major GA or AFDC reforms prior to 1997. The recessions in Illinois, Iowa, Michigan, and, especially, Wisconsin were mild relative to those in Ohio and Pennsylvania, as well as to those in most other states, and their recoveries were earlier.

Michigan's SSI application indices for both sexes increased by more than those in any other state during the first five years of the 1988-1997 period. Earlier pooled time-series analysis of state data suggested that about 34 percent of SSI application growth from 1988 through 1992 – about 7,800 of 1992 applications -- was due to the GA cut (Lewin, 1995a). Analysis of Michigan GA data that were linked to SSA data by Bound et al. (1998) found that from 25 to 67 percent of growth in SSI applications from 1990 to 1991 in Michigan could be attributed to the ending of GA (3,700 to 9,800 applications). They also attributed substantial SSI applications in 1992 and 1993 to the GA cuts (as many as 8,400 in each year), but the size of the impact clearly diminished after 1991.

In 1990, the indices for Michigan, Iowa, and Wisconsin are all very close to one another. Comparison of Michigan's indices to Iowa's in the same year suggest that termination of the GA program accounts for 45 percent of growth in Michigan's indices from 1988 to 1991, and 30 percent from 1988 to 1992. Comparison of Michigan's indices to Wisconsin's suggests that GA explains a much larger share of the growth in Michigan's indices: over 90 percent from 1988 to 1991, and about 85 percent to 1992.[51] The Iowa estimates compare well to our earlier estimates and the upper-end estimates implied by the analysis of Bound et al. (9,900 applications in 1991, and 8,400 in 1992). The Wisconsin-based estimates are well above the upper-end figures from

[51] To obtain these figures, we first used the indices reported in ***Appendix D***, to obtain a figure for each sex. We then divided the difference between the sex-specific indices for the state pair in the relevant year by the Michigan index minus one. We report the simple average of the two figures rounded to the nearest five percent.

Exhibit 4.6
Comparison of Application Trends by Sex in Selected Midwestern States and Pennsylvania



See ***Appendix D*** for full-size graphs and application indices for specific age groups.

Bound et al. One reason might be that Bound et al. based their estimates on analysis of actual applications from GA recipients. Substantial outreach efforts by the State and advocacy groups that were initiated concurrently may have drawn in applications from others as well.[52] Some of the growth attributed to termination in the GA program, in our estimates, could be due to these outreach efforts.

Growth in Wisconsin's application indices during the first part of the period is remarkably low when compared to growth in all other states. The peak of the age-adjusted index for men is 1.28, compared to 1.55 for Iowa, and 1.66 for the entire country. It is likely that this reflects Wisconsin's strong economy. The index for women increases to 1.43 in 1994, but this is also below the corresponding maximum values for Iowa and the entire country.

The divergence between the male and female series for Wisconsin begins in 1991, in advance of the most significant of Wisconsin's welfare waiver demonstrations. Competing explanations include: the gradual cuts in AFDC payment amounts that began in 1995 increased the incentive to apply for SSI; the relatively strong Wisconsin economy caused the number of male applicants to fall relative to female applicants in advance of the recovery, which had the same effect in other states only later; and administrative changes in SSI had a larger impact on male applications than female applications.

It is difficult to argue, based on this information alone, that AFDC reforms in Wisconsin contributed to SSI application growth. The facts seem equally consistent with the view expressed by welfare advocacy organizations in Wisconsin that the State's welfare diversion programs divert individuals from applying for programs other than TANF, including SSI.[53] The only other apparent explanation for the fact that the application index in Wisconsin falls below the 1988 level by 1996 is the strong economy.

Illinois and Ohio both implemented significant GA cuts in 1992. These cuts were about half as large as Michigan's when measured in terms of terminations per capita (Lewin, 1995a). Both states experienced application index growth above the national average, but in Ohio's case, the severity of the recession provides an alternative explanation. Illinois experienced a relatively mild recession, comparable to Michigan's, but somewhat worse than Iowa's. Comparison of the indices for Illinois and Iowa suggests that GA cuts in Illinois account for relatively little of the increase in the Illinois application indices.

Pennsylvania seems a better comparison state for Ohio than any Midwestern state because both of these States experienced exceptionally sharp increases in their unemployment rates. The male and female SSI application indices in these two states are remarkably similar, and, as with Illinois, the comparison provides no evidence that the GA cuts had an impact on Ohio's indices.

[52] Michigan's first AFDC reform during the period was implemented in the fourth quarter of 1992, but was focused on providing transitional assistance for families exiting AFDC and seems unlikely to have had an impact on SSI applications.

[53] See the report on our Wisconsin site visit.

C. Northeastern States

Two northeastern states, Massachusetts and Connecticut, had significant AFDC reforms, although late in the 1988-1997 period. Massachusetts also implemented a significant cut in its GA program in 1992. We compare their trends to those in New York and Pennsylvania, neither of which had AFDC reforms that were likely to increase SSI applications before 1997 (***Exhibit 4.7***). All of the northeastern states experienced a recession that was more severe than for the country as a whole, but the recessions in Massachusetts and Connecticut were especially severe.

The GA and AFDC reforms in Massachusetts might explain why the application indices for both sexes increased by much more than those for New York and Pennsylvania, but an alternative explanation is that the severity of the recession explains the difference. The growth in the indices in Connecticut through 1993 is actually greater than in Massachusetts, even though Connecticut did not cut its GA program and its recession was somewhat less severe, at least as measured by the unemployment rate index. In both states, there is a remarkable increase in the female indices relative to the male indices immediately following the first AFDC reforms, especially in Connecticut. Comparison of the indices in these two states to the corresponding series in New York suggests that AFDC reforms in the former played a role in increasing the female application rate relative to the male rate, but comparison of the same rates to those for Pennsylvania do not.

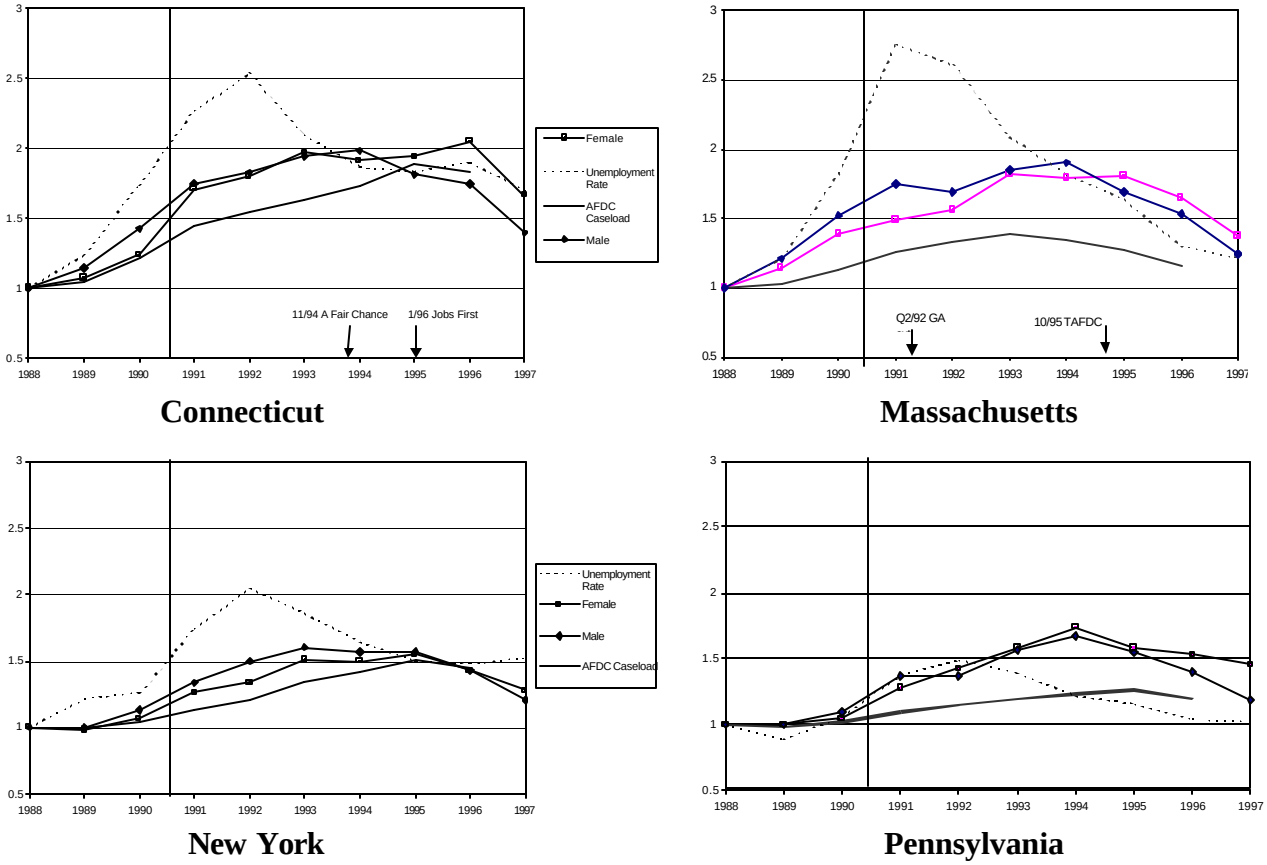
In sum, these simple comparisons offer no clear evidence about the effects of the GA and AFDC reforms in Massachusetts and Connecticut on SSI applications.

D. Pacific Coast States

California implemented significant state-wide AFDC reforms as early as 1994. We compare its trends to those for the other two Pacific coast states (Oregon and Washington), which both had significant reforms but not until at least two years later (***Exhibit 4.8***). California is, unfortunately, difficult to compare to any other single state.

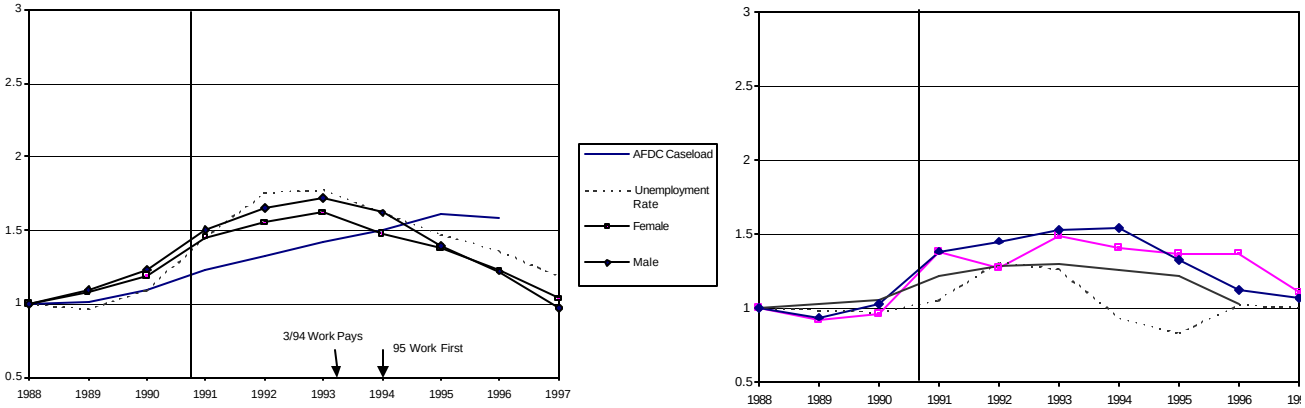
It is possible that California's early reform helps explain the rapid growth in California's indices relative to those of Oregon and, especially, Washington, but the relatively large increase in California's unemployment rate seems a more likely explanation. California's indices were growing substantially more rapidly than those of the other two states well in advance of California's AFDC reform. The high peak for the male index in California relative to that for the female index also seems more consistent with the recession explanation. Further supporting this interpretation, the AFDC caseload index continued to grow rapidly well after the AFDC reform and even after the economy started to improve. If anything, California's data suggest that the 1993 AFDC reform had a negligible impact on SSI applications.

Exhibit 4.7
Comparison of Application Trends by Sex in Selected Northeastern States

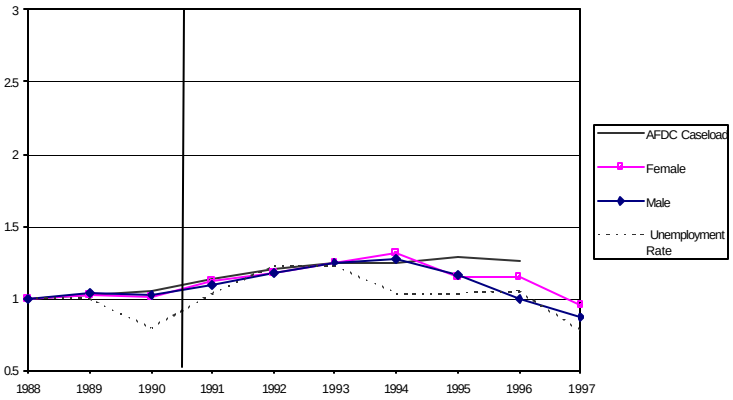


See ***Appendix D*** for full-size graphs and application indices for specific age groups.

Exhibit 4.8
Comparison of Application Trends by Sex in Pacific Coast States



California **Oregon**



Washington

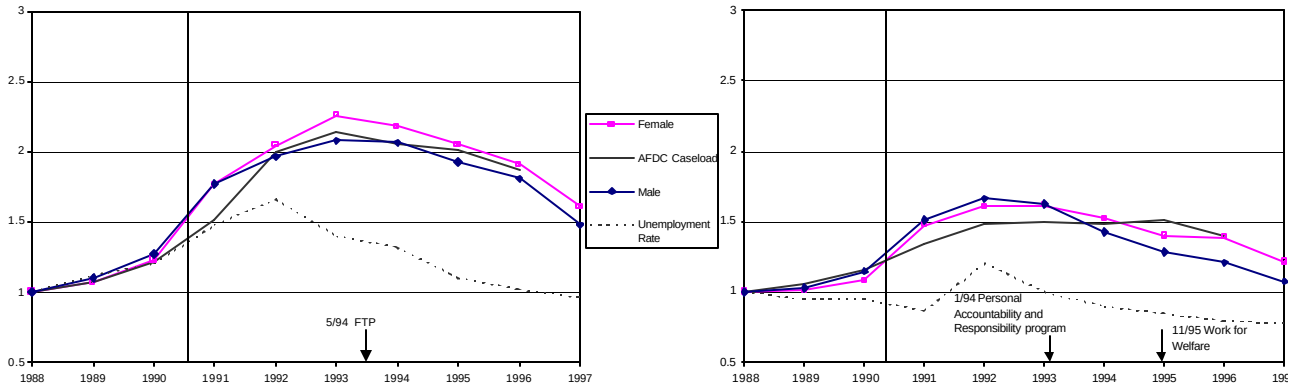
See ***Appendix D*** for full-size graphs and application indices for specific age groups.

E. Southern States

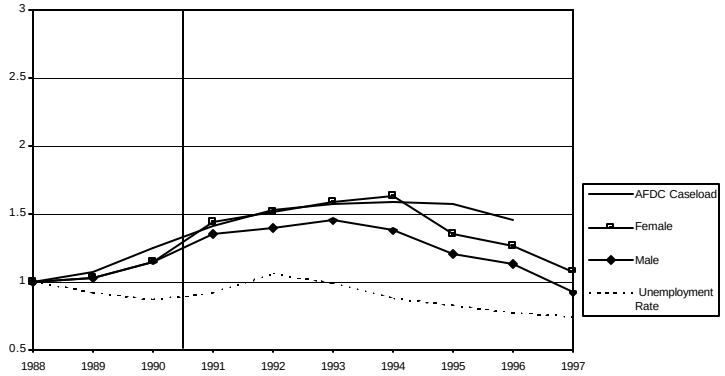
Florida had significant AFDC reforms during the 1988-1997 period, but its reforms were only implemented in part of the state before PRWORA (***Exhibit 4.9***). Georgia instituted AFDC reforms in both 1994 and 1995 that may have had an impact on SSI applications. Texas did not introduce any reforms likely to have an impact on SSI applications before 1996.

There appears to be a clear relationship between the strength of the recession, as measured by the unemployment rate index, and application growth across these three states. There is also a remarkable coincidence of the AFDC caseload index and the application indices in all three states, re-enforcing the observation that common factors seem to be driving participation in these programs. The application indices turn down in advance of the AFDC caseload index in each state. In Georgia, there is an intriguing interruption in the fall of the application index for women in 1996, closely following Georgia's first significant AFDC reforms and coinciding with the first drop in Georgia's AFDC caseload index. In contrast, the men's application index continues to fall in 1996. This pattern is not repeated in either Florida or Texas. It would be premature to make much of this difference, however.

Exhibit 4.9
Comparison of Application Trends by Sex in Selected Southern States



Florida **Georgia**



Texas

See ***Appendix D*** for full-size graphs and application indices for specific age groups.

F. Summary

In summary, the comparison of the application indices across selected states:

- Provides substantial evidence that GA reforms in Michigan had a substantial impact on application growth in that state prior to PRWORA. This is not a new finding, but it serves to illustrate that significant state reforms do show up in comparisons of state application statistics. The comparisons of Michigan to Wisconsin and Iowa also illustrate how difficult it is to estimate the size of even a large reform from such comparisons.

- Does not provide clear evidence of impacts for what appear to be very significant GA reforms in Illinois and Ohio on SSI applications, based on comparisons with series for other states. In general, such comparisons are problematic because too many "other factors," including the economy and SSI program changes, affected the relative growth of application indices across states during this period. It is difficult to attribute any share of differences in the series for a pair of states to any single factor unless that factor is extremely strong, as were the GA cuts in Michigan.

- Prove no concrete evidence that early AFDC reforms had a substantial impact on SSI applications. Perhaps the most interesting finding in this regard is the fact that SSI application growth in Wisconsin, whose AFDC caseload index fell substantially over the period, had much lower application growth than its neighbors. In general comparisons of AFDC caseload indices to application indices suggest that a set of common factors was driving both indices over this period – most likely the economy and perhaps growth in the number of female-headed households.

In the next section, we use econometric methods to try to improve upon the findings from the pairwise comparisons made above. One reason the pairwise comparisons are problematic is that the business cycle varied substantially from state to state, as did its effect on applications. In comparing the indices in a pair of states for the purpose of assessing the effects of reforms in one of them, it is not possible to net out the perhaps disparate effects of the business cycle through simple visual comparisons. The econometric analysis focuses on assessing the behavior of application series in states that instituted reforms which might have affected SSI applications before 1997, *after controlling for (netting out) business cycle effects*, along with the effects of the aging of the baby boom cohort.

IV. POOLED TIME-SERIES ANALYSIS OF STATE SSI APPLICATIONS

A. Overview

In this section, we present findings from state-level pooled time-series analysis of adult SSI disability application indices over the period from 1988 to 1996. In interpreting the findings from this analysis, it is important to keep in mind that we have already controlled for population growth and the aging of the baby boom through the construction of the indices that are used as the dependent variables.

The analysis presented focuses on application indices in states with significant AFDC and GA reforms before 1997, after controlling for business cycle effects. We arrived at the specification presented after a significant effort to develop models that included explanatory variables to capture the effects of: the business cycle; GA cuts; changes in basic AFDC program parameters; various AFDC waivers; immigration; and AIDS/HIV. We did not obtain significant effects for variables other than the business cycle variables and the GA variable. Possible reasons are limited independent time-series variation across states in some of the variables over the period; measurement error; and the likelihood that changes in some of the variables we included have little impact on SSI applications. More information about the variables used in these models appears in ***Appendix Exhibit D.19.***

In brief, the approach we took to developing the models presented was to control for the business cycle as best we could based on periods in which state application series were not likely to be affected by GA or AFDC reforms. We accomplished this by modeling annual changes in the log of the application indices as a function of several labor market variables, year dummies, and a set of "state-year" dummies that effectively remove the corresponding observations from determining the coefficients for the labor market variables and year dummies. The observations "removed" were those we thought most likely to be affected by state reforms. We believe that the resulting specification comes as close as we feasibly can with annual state data at this level of aggregation to determining the extent to which the business cycle and welfare reforms account for the behavior of the indices over the 1988-1996 period. The coefficient of each state-year dummy estimates the percent change in the index for the corresponding state and year, after controlling for the economy and any national factors captured by the year dummy.

We present details of the specifications in ***Section IV.B***. Model estimates are presented in ***Section IV.C***. In ***Section IV.D*** we use the estimates to reconsider the effects of reforms in individual states. The findings are summarized in ***Section IV.E***.

B. Model Specification

We estimate pooled time-series models for each of five application indices – male and female indices, and indices for each of the three age groups. We pool the state time-series data. We use annual data for all 50 states plus the District of Columbia for the years from 1988 to 1996, yielding a sample size of 51 x 9 = 459 "state-years."

The dependent variable in each regression is the annual change in the logarithm of an application index for an age or sex group.[54] The change in the logarithm of a group's application can be interpreted as the percent increase in the group's applications index that is due to factors other than change in the size or age distribution of the group.[55] The first change we observe in the

[54] We also estimated models specified as changes in the levels of the indices. In general, results were very comparable. Coefficients tended to be more significant in the log specification. We report the log specifications primarily because of the ease of interpreting the coefficients.

[55] Recall from the previous section that the index for each sex is current-year applications for the group divided by applications "expected" on the basis of national age-specific application rates for that sex in 1988 and the size of the state's population in each age group for that sex in the current year. For age groups, the index is applications

sample period is from 1988 to 1989, so using changes reduces the sample size to 51 x 8 = 408 state years.

This type of specification is known as a state "fixed effects" specification in the econometric literature. It ignores average cross-state covariation between the *levels* of the dependent and explanatory variables in determining the coefficient estimates, on the grounds that such covariation confounds the effects of the explanatory variables on the dependent variables with the effects of unobserved factors that are unique to each state (e.g., geography). For instance, it is well known that unemployment rates vary substantially across states even when all states are at the peak of the business cycle, reflecting cross-state variation in factors such as the structure of the economy, demographic composition, geography, climate, and culture. Cross-state covariation between the unemployment rate and applications at the peak of the business cycle would likely be non-zero, reflecting relationships between such factors and both applications and unemployment rates, rather than the effect of the business cycle.

The stated fixed effects substantially control for the effects of factors that don't change appreciably over the sample period. This includes such factors as geography, racial and ethnic composition of the population, urban/rural residency, education levels, and the political climate. It could be that sharp changes in some such factors have had an impact on applications over the sample period, but such changes are difficult to measure at the state level due to inadequate data. One example is the percent of female households. This grew over the period and has been identified as a source of growth in AFDC caseloads through 1994, but state-level measures are poor.[56]

We include "fixed year effects," to control for factors that are unique to each year and apply to all states. These are implemented by including dummy variables for each year in the model. The coefficient of each year dummy can be thought of as the "intercept" for that year, and interpreted as the growth rate in the year holding the other variables in the model constant. An important reason to include fixed year effects is to capture the average effects of SSI program changes on applications in all states. They also capture the average effects of factors that are not captured by the other explanatory variables in the model.

We also include a substantial set of "state-year" dummies, to capture the effects of specific GA or AFDC reforms – dummies that identify a specific state-year combination. Our approach to specifying these dummies was not very restrictive. We first identified each reform that could reasonably have an impact on applications during the period, and the year in which it was implemented. We then included a dummy variable for that state that is equal to one only in the implementation year, a second that is equal to one only in the year after implementation, etc., through the third year after implementation. This yields a perfect fit in that state in each of the years that were "dummied out," and those observations have no influence on the estimates of the

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in the age group divided by expected applications for the age group, where the latter is again based on national application rates in 1988 and the size of the state population in the age group in the current year.

[56] A further discussion of this variable appears in **Lewin (1997).** In the AFDC caseload analysis reported there, we did find that marriage and divorce rates had statistically significant coefficients in some models, but estimated effects were small. These rates change slowly over time, making it difficult to identify their effects in this type of analysis.

coefficients for the other variables. The dummy coefficients themselves can be interpreted as the growth in applications in the corresponding state and year *after controlling for the other variables in the model* – i.e., business cycle and year effects (as well as growth and aging of the population). We count the year in which the state reform was implemented as the first year, and assume that the effect of the program change on application growth is zero after the fourth year.[57] Hence, we typically dummy out four observations in a row in a state, but the period is sometimes longer because of sequential reforms, and sometimes shorter because the four-year period is truncated at the end or beginning of the sample.

Most of the state-year dummy variables are based on the AFDC and GA reforms listed in ***Exhibit 4.4***. A few are based on GA reforms that occurred no more than three years prior to 1989, or GA reforms in other states that occurred during the period, but which were substantially smaller in terms of GA recipient reductions per capita than those discussed earlier.[58] A total of 67 dummies, including the eight-year dummies, are included. This effectively leaves 408 – 67 = 341 observations to determine the coefficients of the business cycle variables.

We experimented with three variables to control for the effects of business cycles at the state level: the unemployment rate; the labor force participation rate; and (retail and wholesale) trade employment per capita.[59] The unemployment rate is the measure most often used to capture business cycle effects. In earlier work, we found that reductions in the labor force participation rate are associated with increases in SSI applicants after holding the unemployment rate constant (Lewin, 1995b). This may be due to a "discouraged worker" effect – unemployed workers leaving the ranks of those counted as unemployed because they stop looking for work. Similarly, trade employment per capita proved to have a strong negative relationship with AFDC caseloads after controlling for the unemployment rate in an earlier analysis of AFDC caseloads, perhaps because employment in the trade sector is a better indicator of the strength of the labor market for low-skill workers than the overall unemployment rate (***Lewin, 1997***).

Each of the labor market variables was converted to changes in logarithms. Because the application indices are also changes in logarithms, the coefficient of each labor market variable can be interpreted as the *elasticity* of applications with respect to the variable (i.e., the percent change in applications per percent change in the variable). Because changes in the labor market may affect SSI applications with a substantial lag (while potential applicants look for work and perhaps spend down their assets to qualify), we included the first and second lag of each variable along with the current value. Another reason to include lags is that when the economy deteriorates, applications may first surge, then decline after the initial impact. Thus, a total of nine labor market variables are included in the model when all three labor market measures are

[57] In the cases of interest this assumption is not restrictive for our sample because the sample period ends in or before the third year following the reform.

[58] The states and years that we include dummies for are (one dummy for each year in the range indicated): California (1994 – 1996); Connecticut (1995, 1996); District of Columbia (1992 – 1995); Florida (1995, 1996); Illinois (1992 – 1996); Maine (1992 – 1995); Maryland (1993 – 1996); Massachusetts (1992 – 1996); Minnesota (1992 – 1996); Michigan (1991 – 1996); Ohio (1992 – 1996); Virginia (1992 – 1995); West Virginia (1989 – 1991); and Wisconsin (1994 – 1996). See Lewin (1997a) for details of their GA reforms.

[59] These data were obtained from the website of the Bureau of Labor Statistics. See ***Appendix Exhibit D.19*** for further details on these variables.

used. The sum of the coefficients on the current and lagged values of a labor market measure is the elasticity for the cumulative effect of a change in the variable on applications after three years – referred to as the "long-run" elasticity. Because there is substantial collinearity between the current and lagged values of each variable, we test the joint significance of all three variables, as well as the significance of the long-run elasticity.

We experimented with using all three labor market variables and each possible pair. In the specification with all three, the unemployment rate coefficients and the associated long-run elasticity were statistically insignificant for each of the five applicant groups, while many of the coefficients for the other labor market variables were significant. An F-test failed to reject the hypothesis that all unemployment rate coefficients were zero in each equation. In all equations, except the middle age equation, the test statistic was well below the .05 critical value. Leaving out the unemployment rate had no material effect on the dummy variable coefficients. Hence, we dropped the unemployment rate in the models reported here.[60]

Other than dropping the unemployment rate, we did not attempt to "fine tune" the specification of the labor market variables. While more restrictive specifications might help us better understand the dynamics of labor market effects, the purpose here was different – to simply control for these effects in a reasonable way. It is possible that longer or shorter lags are warranted for some variables.

It is also possible that the estimated coefficients reflect the joint effects of other factors on both the labor market variables and applications. For instance, changes in non-SSA programs might both reduce SSI participation and increase labor force participation, implying a negative association between these two variables that is not due to the effect of a strengthening labor market on SSI applications. Note, though, that the program changes we are interested in have no influence on these coefficients because of the dummy variables we have included to capture their effects.

It is sometimes argued that recessions and recoveries have asymmetric effects on program participation – more specifically, that recessions have large and immediate positive effects on participation, and recoveries have smaller or slower negative effects. Asymmetry is clearly an issue for the number of SSI recipients, because of low termination rates, but may be less of an issue for applications. To test for asymmetries, we split the sample (1989–1992 and 1993–1996), fit the model separately to the two halves, and tested the null hypothesis that the coefficients of the labor market variables are the same. This hypothesis was not rejected for any equation, and the test statistic was well below the critical value in each case.[61]

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[60] The unemployment rate was significant when used alone, and sometimes when used in tandem with just one of the other variables. The F-statistics from the five equations for the test of the hypothesis that all unemployment rate coefficients are zero are: 0.63 for men; 0.31 for women; 1.67 for the youngest age group; 2.12 for the middle age group; and 0.21 for the oldest age group. The .05 critical value of the statistics, which has 3 degrees of freedom in the numerator and 332 in the denominator, is 2.6.

[61] The unemployment variable was not included in the models for this test. The F-statistics from the five equations for the test of this hypothesis are: 1.17 for men; 1.42 for women; 1.28 for the youngest age group; 0.92 for the middle age group; and 1.67 for the oldest age group. The .05 critical value for each statistic, which has 6 degrees of freedom in the numerator and 329 in the denominator, is 2.1.

We use a simple specification for the regression disturbance because implementation of a more complex one did not seem warranted for this exploratory analysis. We assume that the disturbance has a specific form of heteroskedasticity: the variance of the disturbance is inversely proportional to expected applications (i.e., to the denominator of the application index). We also assume that the disturbances are mutually independent, both across states and within states over time. Hence, we used weighted least squares to estimate the model, with expected applications used for weights; the larger a state's expected applications, the more weight it is given in determining the coefficients. The t-statistics reported in the next section might overstate the significance of individual coefficients because we did not adjust them for possible serial correlation, contemporaneous correlation, or heteroskedasticity other than the type of heteroskedasticity assumed. The coefficients should not be biased, however.

C. Estimates

We provide an overview of the regression results in this subsection (***Exhibit 4.10***). In the next subsection we use the coefficients of the state-year specific dummies to re-examine the effects of AFDC and GA reforms on SSI applications.

The long-run elasticities for each of the two labor market variables are statistically significant in four of the five models, and all have the anticipated negative sign.[62] The point estimates for the trade employment elasticity range from negative 0.43 (age 30-39 equation) to negative 1.17 (male equation), while those for the labor force participation elasticity range from negative 0.53 (age 40-64 equation) to negative 1.80 (age 30-39) equation.

In most equations, the coefficients for the current year change for both variables are much larger than those for the lagged values, suggesting that most of the impact of a change in the variable on application growth occurs in the same year. Coefficients for the lags are sometimes positive. It could well be the case that deterioration in the labor market initially increases applications, but that applications subsequently fall after the initial wave, even if the labor market doesn't recover. This would result in positive coefficients for some of the lagged values, as we have found in some cases, but only one of these is significant (the second lag of the trade variable in the age 30-39 equation). Negative, sometimes significant, coefficients prevail for the lagged variables – especially for the labor force participation rate.

Most of the year dummies (third page of ***Exhibit 4.10***) are statistically significant, and some are quite large. The coefficients for 1991 are the largest, and indicate that the application indices in each group increased from 17 to 23 percent in that year alone, *after controlling for business cycle effects and the state program reforms.* This compares to an increase in the aggregate national index of 23 percent. Thus, in this year the bulk of the growth in the index is not accounted for by

[62] An asterisk next to a coefficient indicates that the t-statistic is greater than 1.65 in absolute value. This is the critical value for a two-sided 10% test or a one-sided 5% test. Many of these t-statistics exceed 1.96, the critical value for a two-sided 5% test or a one-sided 2.5% test. It should be kept in mind, however, that the t-statistics may be biased upward.

Exhibit 4.10
Regression Coefficients for Application Index Models

Explanatory Variables		Dep. Var.: Change in *ln(Applications/Expected Applications)*				
		Female	**Male**	**18 - 29**	**30 - 39**	**40 - 64**
ln(Trade Employment per Capita)	current	-0.326	-1.144 *	-0.656 *	-0.664 *	-0.763 *
		(-1.01)	(-3.72)	(-1.73)	(-1.97)	(-2.29)
	1st lag	-0.099	-0.240	-0.058	-0.483	-0.122
		(-0.26)	(-0.65)	(-0.13)	(-1.19)	(-0.31)
	2nd lag	-0.271	0.211	-0.204	0.721 *	-0.226
		(-0.83)	(0.68)	(-0.53)	(2.12)	(-0.67)
	long-run elasticity	**-0.696 ***	**-1.173 ***	**-0.917 ***	**-0.427**	**-1.111 ***
		(-2.20)	**(-3.88)**	**(-2.45)**	**(-1.28)**	**(-3.42)**
ln(Labor Force Participation Rate)	current	-0.619 *	-0.281	-0.583 *	-0.447 *	-0.363
		(-2.42)	(-1.15)	(-1.90)	(-1.65)	(-1.39)
	1st lag	-0.471 *	-0.383	-0.775 *	-0.561 *	-0.287
		(-1.75)	(-1.49)	(-2.38)	(-1.96)	(-1.04)
	2nd lag	-0.218	-0.142	-0.075	-0.793 *	0.118
		(-0.76)	(-0.52)	(-0.22)	(-2.61)	(0.40)
	long-run elasticity	**-1.309 ***	**-0.806**	**-1.432 ***	**-1.801 ***	**-0.533**
		(-2.34)	**(-1.51)**	**(-2.12)**	**(-3.03)**	**(-0.94)**
Michigan Dummies	1991	0.183 *	0.114 *	0.074	0.088 *	0.217 *
		(3.88)	(2.53)	(1.31)	(1.78)	(4.48)
	1992	-0.045	0.028	0.088	0.061	-0.093 *
		(-0.96)	(0.62)	(1.56)	(1.24)	(-1.94)
	1993	0.073	0.117 *	0.178 *	0.131 *	0.019
		(1.60)	(2.66)	(3.18)	(2.70)	(0.42)
	1994	-0.044	-0.112 *	-0.109 *	-0.046	-0.077 *
		(-0.96)	(-2.55)	(-1.91)	(-0.95)	(-1.67)
	1995	-0.139 *	-0.170 *	-0.106 *	-0.221 *	-0.142 *
		(-3.06)	(-3.87)	(-1.86)	(-4.53)	(-3.09)
	1996	-0.072	-0.077 *	-0.080	-0.151 *	-0.024
		(-1.61)	(-1.78)	(-1.39)	(-3.09)	(-0.52)
Wisconsin Dummies	1994	0.061	0.097	0.113	0.130 *	0.024
		(0.97)	(1.62)	(1.44)	(1.95)	(0.38)
	1995	0.025	-0.089	-0.042	-0.109 *	0.034
		(0.41)	(-1.50)	(-0.53)	(-1.65)	(0.55)
	1996	-0.148 *	-0.086	-0.105	-0.054	-0.162 *
		(-2.39)	(-1.45)	(-1.34)	(-0.81)	(-2.63)
Massachusetts Dummies	1992	-0.063	-0.097 *	-0.045	-0.084	-0.103 *
		(-1.07)	(-1.72)	(-0.64)	(-1.37)	(-1.68)
	1993	0.079	0.051	-0.005	0.155 *	0.039
		(1.36)	(0.92)	(-0.07)	(2.56)	(0.65)
	1994	0.000	0.074	0.054	0.051	0.023
		(0.00)	(1.35)	(0.78)	(0.87)	(0.40)
	1995	0.096 *	-0.033	0.127 *	-0.006	0.001
		(1.71)	(-0.61)	(1.81)	(-0.10)	(0.02)
	1996	-0.053	-0.024	-0.094	-0.046	-0.007
		(-0.95)	(-0.43)	(-1.31)	(-0.78)	(-0.13)

Exhibit 4.10 (continued)
Regression Coefficients for Application Index Models

Explanatory Variables		Dep. Var.: Change in *ln(Applications/Expected Applications)*				
		Female	**Male**	**18 - 29**	**30 - 39**	**40 - 64**
Connecticut Dummies	1995	0.084	-0.017	0.015	-0.067	0.089
		(1.10)	(-0.22)	(0.15)	(-0.84)	(1.17)
	1996	0.091	0.045	0.142	0.137 *	0.003
		(1.20)	(0.61)	(1.40)	(1.70)	(0.04)
California Dummies	1994	-0.103 *	-0.043	-0.045	-0.076 *	-0.078 *
		(-3.56)	(-1.58)	(-1.31)	(-2.59)	(-2.63)
	1995	0.012	-0.061 *	-0.043	-0.072 *	-0.003
		(0.41)	(-2.33)	(-1.29)	(-2.49)	(-0.11)
	1996	-0.079 *	-0.045 *	-0.115 *	-0.096 *	-0.035
		(-2.86)	(-1.75)	(-3.43)	(-3.41)	(-1.27)
Florida Dummies	1995	0.029	0.006	-0.036	-0.001	0.041
		(0.74)	(0.15)	(-0.71)	(-0.03)	(1.06)
	1996	-0.035	0.020	0.027	-0.038	-0.007
		(-0.92)	(0.54)	(0.53)	(-0.90)	(-0.20)
Washington, DC Dummies	1992	-0.059	-0.031	0.218	-0.057	-0.104
		(-0.34)	(-0.18)	(1.11)	(-0.31)	(-0.56)
	1993	0.037	-0.092	-0.229	0.012	-0.019
		(0.21)	(-0.54)	(-1.15)	(0.07)	(-0.10)
	1994	-0.112	0.117	0.030	0.003	0.018
		(-0.64)	(0.67)	(0.14)	(0.02)	(0.10)
	1995	0.031	-0.067	0.077	-0.065	-0.036
		(0.17)	(-0.38)	(0.36)	(-0.34)	(-0.20)
Illinois Dummies	1992	0.037	0.100 *	0.060	0.151 *	0.021
		(0.86)	(2.42)	(1.17)	(3.35)	(0.47)
	1993	-0.049	-0.042	0.025	-0.106 *	-0.057
		(-1.18)	(-1.05)	(0.49)	(-2.42)	(-1.34)
	1994	-0.047	-0.046	-0.009	-0.033	-0.081 *
		(-1.13)	(-1.16)	(-0.17)	(-0.76)	(-1.91)
	1995	-0.086 *	-0.171 *	-0.166 *	-0.228 *	-0.055
		(-2.07)	(-4.27)	(-3.18)	(-5.17)	(-1.31)
	1996	-0.156 *	-0.215 *	-0.232 *	-0.224 *	-0.141 *
		(-3.75)	(-5.37)	(-4.40)	(-5.04)	(-3.36)
Maryland Dummies	1993	-0.018	0.057	0.060	0.113 *	-0.036
		(-0.29)	(0.96)	(0.77)	(1.78)	(-0.57)
	1994	0.024	-0.147 *	-0.145 *	-0.051	-0.055
		(0.38)	(-2.48)	(-1.85)	(-0.80)	(-0.88)
	1995	-0.041	-0.028	0.039	-0.108 *	-0.023
		(-0.67)	(-0.48)	(0.49)	(-1.72)	(-0.37)
	1996	-0.015	-0.079	-0.041	-0.013	-0.071
		(-0.24)	(-1.34)	(-0.51)	(-0.21)	(-1.16)

Exhibit 4.10 (continued)
Regression Coefficients for Application Index Models

Explanatory Variables		Dep. Var.: Change in *ln(Applications/Expected Applications)* Female	Male	18 - 29	30 - 39	40 - 64
Maine Dummies	1992	-0.076	0.142	0.044	0.047	0.027
		(-0.61)	(1.19)	(0.28)	(0.36)	(0.22)
	1993	0.106	0.151	0.116	0.144	0.130
		(0.85)	(1.27)	(0.73)	(1.09)	(1.04)
	1994	0.012	-0.032	-0.128	0.070	-0.006
		(0.10)	(-0.27)	(-0.80)	(0.53)	(-0.05)
	1995	-0.070	-0.063	0.060	-0.158	-0.071
		(-0.57)	(-0.53)	(0.37)	(-1.19)	(-0.58)
Minnesota Dummies	1992	0.012	-0.025	-0.058	-0.024	0.018
		(0.18)	(-0.39)	(-0.72)	(-0.35)	(0.26)
	1993	0.074	0.080	0.149 *	0.118 *	0.004
		(1.11)	(1.27)	(1.82)	(1.74)	(0.07)
	1994	0.008	-0.084	-0.081	-0.049	-0.011
		(0.12)	(-1.34)	(-0.97)	(-0.72)	(-0.17)
	1995	-0.033	-0.110 *	-0.056	-0.083	-0.073
		(-0.50)	(-1.76)	(-0.67)	(-1.22)	(-1.11)
	1996	-0.028	-0.040	0.084	-0.139 *	-0.037
		(-0.42)	(-0.65)	(1.01)	(-2.03)	(-0.58)
Ohio Dummies	1992	0.050	0.019	0.035	0.072	0.010
		(1.18)	(0.46)	(0.67)	(1.58)	(0.22)
	1993	-0.009	0.041	0.036	0.034	-0.015
		(-0.20)	(0.99)	(0.69)	(0.75)	(-0.34)
	1994	-0.014	-0.048	0.025	-0.046	-0.052
		(-0.34)	(-1.17)	(0.48)	(-1.01)	(-1.22)
	1995	0.026	-0.028	-0.024	-0.066	0.051
		(0.61)	(-0.68)	(-0.44)	(-1.43)	(1.19)
	1996	-0.042	-0.025	0.045	-0.040	-0.070 *
		(-0.99)	(-0.61)	(0.83)	(-0.87)	(-1.67)
Rhode Island Dummies	1993	0.110	-0.043	0.103	0.004	0.047
		(0.77)	(-0.32)	(0.61)	(0.03)	(0.32)
	1994	-0.138	0.063	0.192	-0.198	-0.089
		(-0.99)	(0.47)	(1.14)	(-1.35)	(-0.63)
	1995	0.036	0.139	-0.005	0.200	0.070
		(0.25)	(1.03)	(-0.03)	(1.35)	(0.49)
	1996	-0.004	-0.060	0.008	-0.110	-0.008
		(-0.03)	(-0.45)	(0.05)	(-0.74)	(-0.05)
Virginia Dummies	1992	-0.011	-0.036	0.005	-0.046	-0.023
		(-0.21)	(-0.68)	(0.07)	(-0.80)	(-0.41)
	1993	-0.056	-0.100 *	-0.127 *	0.011	-0.102 *
		(-1.02)	(-1.90)	(-1.92)	(0.19)	(-1.81)
	1994	-0.042	0.031	0.031	-0.021	-0.012
		(-0.78)	(0.60)	(0.47)	(-0.38)	(-0.22)
	1995	0.022	0.024	0.016	0.001	0.035
		(0.41)	(0.47)	(0.24)	(0.02)	(0.65)

Exhibit 4.10 (continued)
Regression Coefficients for Application Index Models

Explanatory Variables		Dep. Var.: Change in *ln(Applications/Expected Applications)* Female	Male	18 - 29	30 - 39	40 - 64
West Virginia Dummies	1989	0.022	0.032	0.026	0.042	0.024
		(0.21)	(0.32)	(0.21)	(0.37)	(0.23)
	1990	0.006	-0.051	0.006	-0.038	-0.023
		(0.06)	(-0.50)	(0.05)	(-0.34)	(-0.23)
	1991	0.098	0.161	0.148	0.164	0.110
		(0.95)	(1.60)	(1.14)	(1.43)	(1.07)
Year Dummies	1989	0.036 *	0.050 *	0.043 *	0.077 *	0.028 *
		(2.97)	(4.29)	(3.04)	(5.96)	(2.22)
	1990	0.127 *	0.131 *	0.148 *	0.161 *	0.107 *
		(10.39)	(11.29)	(10.27)	(12.61)	(8.53)
	1991	0.227 *	0.186 *	0.165 *	0.191 *	0.226 *
		(17.61)	(15.17)	(10.92)	(14.26)	(17.06)
	1992	0.082 *	0.050 *	0.122 *	0.094 *	0.032 *
		(6.66)	(4.23)	(8.31)	(7.25)	(2.52)
	1993	0.065 *	0.066 *	0.097 *	0.123 *	0.032 *
		(5.26)	(5.63)	(6.51)	(9.50)	(2.54)
	1994	0.002	0.000	0.018	0.017	-0.011
		(0.18)	(-0.01)	(1.14)	(1.24)	(-0.83)
	1995	-0.079 *	-0.058 *	-0.052 *	-0.032 *	-0.090 *
		(-6.09)	(-4.65)	(-3.19)	(-2.28)	(-6.81)
	1996	-0.028 *	-0.069 *	-0.035 *	-0.058 *	-0.046 *
		(-2.19)	(-5.61)	(-2.17)	(-4.18)	(-3.57)

* |t| > 1.645

the combination of business cycle effects and welfare reforms. While the coefficients are all positive for each year from 1989 to 1994, they all turn negative in 1995 and 1996. Most are significant, indicating that the business cycle and the state reforms we model leave substantial growth or decline unaccounted for.

The relative values of the male and female year dummy coefficients vary from year to year, but over all years they show an increase in female applications relative to male applications holding other things constant. The sum of the year dummy coefficients for women is 0.43, vs. 0.36 for men. Thus, after controlling for the business cycle and the reforms we have captured in the model, as well as demographics, female applications increase relative to male applications over the period.

D. Analysis of Trends in States with Early Reforms

Recall that the coefficient of a year-state dummy can be interpreted as the percent difference between actual application growth in that state and year, and the growth that is accounted for by other factors in the model. Many of the year-state dummy coefficients are statistically significant, indicating that this "residual" growth (or decline) is not just random noise. At the same time, however many are insignificant. The dummies for Michigan, California, Illinois, and Maryland have the largest number of significant coefficients relative to total coefficients. None

of the dummies for Florida, the District of Columbia, Maine, Rhode Island, or West Virginia has significant coefficients. Other states each have a small number of significant coefficients.

In what follows, we discuss individual coefficients as representing the effects of factors that are "unique" to the respective state. These factors might or might not be related to the welfare reforms identified. Examination of the signs and patterns of the coefficients across equations and years can provide clues as to the nature of the factors responsible for the residual growth, as can information from other sources. Ultimately, though, it is not possible to "prove" that the coefficients represent the effects of welfare reform, in whole or in part.

The Michigan dummy coefficients for 1991 are significant and large in all equations. They show that growth in the index from 1990 to 1991 of seven to 22 percent is accounted for by unique factors – presumably the termination of GA, plus associated outreach activities. The values for the male and female coefficients together imply that about 5,500 applications in 1991 are due to Michigan's unique factors -- in the middle of the range obtained by Bound et al., and less than the number we obtained when making comparisons of Michigan to Iowa and Wisconsin without adjusting for the business cycle.

A somewhat surprising finding is that the effect in 1991 is larger for women than for men. This finding disappears if we look over the first three years after the ending of the GA program. Adding together the 1991 and 1992 Michigan coefficients yields an estimate of the percent growth from 1990 to 1992, and so on. Thus, according to these estimates, the unique factors in Michigan increased male applications by almost 26 percent from 1990 to 1993, and increased female applications by 21 percent. These estimates imply an increasing effect for men from 1991 through 1993 and not much change for women, which is inconsistent with the Bound et al. finding of a diminishing effect.

Starting in 1994, the Michigan dummy coefficients turn negative, and most are significantly negative. If the labor market variables and annual dummies are successfully holding both business cycle effects and national policy changes constant for Michigan, these negative coefficients presumably reflect the end of the surge of applications following the termination of GA, plus effects of any other welfare reform activities in Michigan. We suggest an additional explanation in the context of our discussion of Illinois, below.

We do find evidence of the impacts of GA cuts for the states that significantly cut their GA programs in 1992, although it is much weaker. The Illinois coefficients in the male and age 30-39 equations are both positive and significant in that year while those in the other equations are also positive. The Ohio coefficients in the same year are also all positive, although not significant. Maryland, Maine, Massachusetts, and Minnesota all implemented smaller cuts in 1992. The age 30-39 coefficient is positive and significant for Maryland. All of the Maine coefficients except the female coefficient are positive, although not significant. The Massachusetts cuts were quite small, and the impact is not clear, but is perhaps worth noting that the 1993 coefficient for the age 30–39 group is positive and significant. The Minnesota coefficients are small in 1992, but those in 1993 are all positive and are significant for both the 18–29 and 30–39 age groups. The District of Columbia also cut its GA program significantly in 1992, but no clear pattern emerges in the District's coefficients for 1992.

The GA cuts in these states appear not to have a positive effect on applications after 1993, and the coefficients in later years generally turn negative, perhaps reflecting the end of the surge in applications from the GA cuts. The coefficients in Illinois are particularly large and negative in 1995 – so large that there must be an additional explanation. One possible explanation is that the DA&A legislation of 1994 and 1996 had a substantial negative impact in Illinois, which was the state with the largest number of DA&A cases per capita on the SSI and DI rolls in March 1996 (167 percent above the national average) -- just before Congress passed the law that ended benefits for those whose drug or alcohol was material to disability (Lewin, 1998). This may be evidence that the 1994 law, or anticipation of the 1996 law, had a substantial negative impact on applications. It is worth noting that Michigan had the fourth largest number of DA&A SSI recipients per capita in the same month, which may help explain the large negative coefficients observed for Michigan in the same years.

In Wisconsin, we find that the 1994 coefficients are all positive, and the one for those age 30–39 is significant. The explanation may be AFDC reforms implemented in that year or earlier, but in the following years the coefficients turn negative, despite 1995 cuts in Wisconsin's GA program. Some of the negative coefficients are both large and significant – especially for women, and especially for the youngest and oldest age group in 1996. We find this pattern difficult to interpret.

In Massachusetts, the coefficients for the female equation and the age 18–29 equation are both positive and significant in 1995. This is the year in which the State implemented its first major AFDC reform, the Transitional Aid to Families with Dependent Children program, so these results are suggestive of a positive effect on SSI applications from young women. The program was not implemented until October of 1995, however, and it seems unlikely that such a large effect would be observed so quickly.

In Connecticut, the female coefficients are positive in both 1995 and 1996, and each has a t-statistic above 1.0, but neither is significant on its own. The male equation coefficients are closer to zero (one is negative), so this finding is at least consistent with a positive effect of Connecticut's AFDC reforms (A Fair Chance, implemented in November 1994, and Reach for Jobs First, implemented in January 1996) on SSI applications from women. The coefficients for the two youngest age groups are large and positive in 1996, and the one for the age 30–39 equation is significant, again consistent with a positive effect of reform.

The coefficients in California for all three years (1994–1996) are almost all negative and many are statistically significant. There is no obvious evidence of an impact of California's AFDC reforms. The SSA DA&A reforms may play a role here. Like Illinois and Michigan, the number of DA&A cases per capita was much higher than the national average before the 1996 DA&A legislation was passed (Lewin, 1998).

E. Summary

In summary:

- The labor market variables and the dummies included to capture the effects of state reforms leave much of the annual growth in the early period unaccounted for, as well as much of the

decline at the end of the period. This suggests that national factors played a very significant role, including SSA reforms.

- The analysis finds effects of termination of Michigan's GA programs that are roughly similar to those found in previous analyses. We also find some evidence that more modest GA cuts in other states increased applications, but this evidence is not very strong in any individual state. While the evidence provides qualitative support for the view that GA cuts during the period had a substantial impact on SSI applications, it does not provide very satisfactory information about the quantitative effects, especially at the state level.

- We find what might be termed glimmers of evidence about positive impacts of early AFDC reforms on applications from women and from those in younger age groups in Massachusetts and Connecticut, but not elsewhere.

- Applications in a few states that had exceptionally high SSI and DI DA&A caseloads per capita before passage of the 1996 DA&A legislation declined by significantly more in 1995 and 1996 than can be explained by the labor market variables and the average effect of national policy changes or other factors. One explanation might be that the 1994 and 1996 DA&A legislation may have substantially deterred applications in these states.

Despite our attempt to capture labor market effects, it might be that the estimates still miss a substantial share of the impact of the recession on applications. If so, then the estimates misleadingly leave much of the growth and decline in applications over the period to be explained by other factors, and the coefficients on some of the state-year dummy variables might be biased. This might, for example, reduce the estimate of the effect of GA cuts in Michigan, and reduce the negative coefficients on the state-year dummies in the states that had exceptionally high DA&A caseloads.

An important reason for concern is the accuracy of state labor market data. Measurement errors generally result in estimates of effects of true variables that are biased downward in magnitude. This is exacerbated when changes in variables are analyzed because measurement errors are a relatively more important source of variation than variation in levels.

Even if the employment statistics contain no measurement errors, the labor market variables might still fall short of capturing the full effects of business cycles because the relationship between the business cycle and applications may vary considerable across states. Such variation could be due to variation in the nature of the economy, population characteristics, public policies, and perhaps to other factors.

V. CONCLUSION

Adult SSI disability application rates grew rapidly in all states from 1988 to 1993, and had substantially declined in most by 1997. This pattern of growth applies to both sexes and all age groups. The most important causes of this pattern appear to be: the recession of 1991 and the subsequent sustained recovery; cuts in state general assistance programs and other state policy changes; and a variety of administrative changes to SSI. The aging of the baby boom cohort also contributed to application growth during this period.

Application rates for women increased relative to those for men over this period, even after adjusting for the aging of the baby boom cohort and the fact that women have historically applied at lower rates than men when young, and higher rates when older. We found no credible evidence that these changes were caused by pre-PRWORA AFDC reforms. It seems likely, however, that growth in applications during this period represents shifts in program participation from AFDC to SSI that were caused by other factors, especially among women and especially among the youngest and middle age groups. Administrative changes in the SSI program may be an important reason for this shift.

The comparison of trends in selected states and the pooled time-series analysis show that the effects of major state reforms, such as the termination of Michigan's GA program, are clearly evident in such comparisons, but effects of smaller GA cuts in other states are much more difficult to detect. Further, even when an impact is evident, the estimated size of that impact may vary substantially, depending on a wide variety of assumptions that, inevitably, are quite arbitrary.

We found some evidence to suggest that the DA&A reforms reduced applications in states that had very high SSI and DI DA&A caseloads before the 1996 DA&A legislation, but it would be premature to draw this conclusion. We are particularly concerned that difficulties in capturing the full effects of the business cycle on applications may result in overstatement of the importance of SSA policy on applications during this period.

We conclude that analysis of annual state-level trends in all SSI applications is not likely to yield accurate estimates of the effects of non-SSA welfare reforms on SSI applications. We reach this conclusion primarily because of the findings concerning the effects of GA reforms, but also because of our concerns about how well the approach can capture labor market effects. Significant improvements might be achieved from analysis of applications by age and sex, and by use of quarterly data. Measures of poverty and some of its proximate causes, such as the number of female-headed households, might also add significantly to the explanatory powers of these models, but state-level measures of these variables are highly contaminated with measurement error.

We think it would be a mistake for SSA to rely on pooled time-series analysis of state applications and other program outcomes as the primary approach to evaluating the impacts of the reforms. We recommend, instead, that SSA compare within state trends in outcomes for groups targeted by the reforms to those groups not targeted to obtain first-cut estimates for each state. Pooled time-series analysis could be pursued to refine these estimates, and to assess their relationship to specific state reforms. We develop an evaluation option that uses this approach in Chapter 6.

At the beginning of ***Section II***, we posed the following question: Is it reasonable to think that the application experience in the pre-1996 period would have been replicated after 1996 in the absence of the reforms legislated in 1996 and 1997? The answer is clearly no. There were many factors, including the economy and national and state program changes, that influenced applications during this period, and there is no reason to think that such changes would have been replicated after this period in the absence of the legislation. It is unfortunate that we do not have a more complete understanding of the influence of the various factors. Our limited

understanding makes it problematic to use this period as a base against which to measure the impact of reform. While further pooled time series analyses might significantly improve our understanding of SSI application growth in this period, it seems unlikely that this methodology alone would be able to raise our level of knowledge about this period sufficiently for our purposes – the evaluation of the recent SSA and non-SSA reforms.

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